



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,589	08/29/2003	Vincent C. Moyer	10021040-1	9284

57299 7590 04/19/2006

AVAGO TECHNOLOGIES, LTD.  
P.O. BOX 1920  
DENVER, CO 80201-1920

EXAMINER
----------

GOKHALE, SAMEER K

ART UNIT	PAPER NUMBER
----------	--------------

2629

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/651,589	MOYER, VINCENT C.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sameer K. Gokhale	2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 - 6,8-11,17-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobachi et al. (US 6,326,948) (hereafter, "Kobachi").

Regarding claim 1, Kobachi teaches an input device comprising: a sensor (Fig. 1, item S) adapted to detect movement (Fig 1, see col. 8, lines 53-55, S detects the movement of reflective plate 3); and a captive disc (Fig. 1, item 1) movably suspended over said sensor (Fig.1, see col. 8, lines 6-7), said captive disc having an active surface (Fig. 1, item 3) facing said sensor; and a horizontal spring allowing resistive movement of said captive disc in horizontal direction Fig. 1, item 2, or Fig. 27, spring 2). However, Kobachi does not teach a single embodiment featuring a horizontal spring as discussed above, as well as a vertical spring allowing resistive movement of said captive disc in vertical direction.

However, Kobachi does teach an embodiment with a vertical spring allowing resistive movement of a captive disc in the vertical direction (see Fig. 35)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the vertical spring and the spacing created between the sensor and captive surface of Kobachi's embodiment on Fig. 35 into the first

Art Unit: 2629

embodiment of Kobachi on Fig. 1, where the motivation to combine is to create a device that allows movement in the X and Y direction in order to detect X-Y movements of a cursor control device, and also to allow movements in the vertical direction such that an additional type of input in the Z-direction can be sensed.

Regarding claim 2, Kobachi further teaches a device further comprising a frame (Fig. 1, item 6) housing said captive disc; and said horizontal spring (Fig. 1, item 2, see col. 8, 19-20) adapted to center said captive disc within said frame (Fig. 1).

Regarding claim 3, Kobachi further teaches a device wherein said captive disc is substantially flat (Fig. 1, here the disc is substantially flat).

Regarding claim 4, Kobachi further teaches a device wherein said captive disc has convex shape (Fig. 1, the top surface of item 1 is convex relative to the sensor S, also see Fig. 16 for an embodiment where the top surface is convex relative to the user's finger).

Regarding claim 5, Kobachi further teaches a device wherein said active surface comprises navigation area (Fig. 1, where the surface of item 3 is the navigation area) and border area (the bottom surface of item 1), said border area generally surrounding said navigation area (Fig. 1, it is inherent that the surface area portion of item 1 that surrounds item 3).

Regarding claim 6, Kobachi further teaches a device wherein the navigation area has a predetermined pattern (see col. 9, lines 55-63).

Regarding claim 8, Kobachi further teaches a device wherein said sensor is configured to sense images proximal to a focal plane (col. 9, lines 41-48, it is inherent that the plane perpendicular to the optical axis that is mentioned here is the focal plane).

Regarding claim 9, Kobachi further teaches a device further comprising an activation switch (Fig. 31, item 40) adapted to detect pressure on said captive disc (see col. 17, lines 25-28).

Regarding claim 10, Kobachi further teaches a device further comprising a selection switch (Fig. 31, item 40) adapted to detect user selection (see col. 17, lines 47-53, it is inherent that item 40 can be operated as a switch from the 2-dimensional plane to the 3-dimensional plane where a user makes a selection to move in the Z-direction by applying pressure to item 40).

Regarding claim 11, Kobachi further teaches a device further comprising a light source (Fig. 1, item LD) adapted to provide illumination on the active surface (col. 8, lines 26-28).

Regarding claim 17, Kobachi teaches an electronic apparatus comprising: a screen (col. 1, line 7) displaying information including an icon (col. 1, line 7); an input device for controlling the icon (col. 1, line 6), said input device comprising: a sensor adapted to detect movement (Fig. 1, item S); and a captive disc (Fig. 1, item 1) movably suspended over said sensor (Fig. 1), said captive disc having an active surface (Fig. 1, item 3) facing said sensor; and a horizontal spring allowing resistive movement of said captive disc in horizontal direction Fig. 1, item 2, or Fig. 27, spring 2). However, Kobachi does not teach a single embodiment featuring a horizontal spring as discussed above, as well as a vertical spring allowing resistive movement of said captive disc in vertical direction.

However, Kobachi does teach an embodiment with a vertical spring allowing resistive movement of a captive disc in the vertical direction (see Fig. 35)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the vertical spring and the spacing created between the sensor and captive surface of Kobachi's embodiment on Fig. 35 into the first embodiment of Kobachi on Fig. 1, where the motivation to combine is to create a device that allows movement in the X and Y direction in order to detect X-Y movements of a cursor control device, and also to allow movements in the vertical direction such that an additional type of input in the Z-direction can be sensed.

Regarding claim 18, Kobachi further teaches an apparatus further comprising: frame housing (Fig. 1, item 6) said captive disc; and said horizontal spring (Fig. 1, item 2) adapted to center said captive disc within said frame (Fig. 1)

Regarding claim 19, Kobachi further teaches an apparatus wherein said captive disc is substantially flat (Fig. 1, here the disc shown is substantially flat).

Regarding claim 20, Kobachi teaches an apparatus wherein said captive disc has convex shape (Fig. 1, the top surface of item 1 is convex relative to the sensor S, also see Fig. 16 for an embodiment where the top surface is convex relative to the user's finger).

Regarding claim 21, Kobachi teaches an apparatus wherein said active surface comprises navigation area (Fig. 1, where the surface of item 3 is the navigation area) and border area (the bottom surface of item 1), said border area generally surrounding said navigation area (Fig. 1, it is inherent that the surface area portion of item 1 that surrounds item 3).

Regarding claim 23, Kobachi teaches an apparatus wherein said sensor is adapted to sense images proximal to a focal area (col. 9, lines 41-48, it is inherent that the plane perpendicular to the optical axis that is mentioned here is the focal plane).

3. Claims 7, 12-16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobachi in view of Sayag (US 5,801,681).

Regarding claim 7, Kobachi teaches the limitations of claim 1 and 2 as discussed above. However, Kobachi does not teach a focusing lens adapted to focus light from a portion of the active surface to said sensor when the active surface is proximal to a focal plane.

However, Sayag does teach an optical input device comprising a focusing lens (Fig. 1, lens 108) adapted to focus light from a portion of an active surface (Fig. 1, the surface of finger 102) to a sensor (Fig. 1, sensor 110) when the active surface is proximal to a focal plane (Fig. 1, here active surface 102 is fixed in the focal plane).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Sayag into the teaching of Kobachi's to include a focusing lens between the active surface and the sensor where the motivation to combine is to reduce the image size of the item to be detected.

Regarding claim 12, Kobachi in view of itself teaches an input device comprising: a sensor (Fig. 1, item S) adapted to detect movement (Fig 1, see col. 8, lines 53-55, S detects the movement of reflective plate 3); a captive disc (Fig. 1, item 1) movably suspended over said sensor (Fig.1, see col. 8, lines 6-7), said captive disc having an active surface (Fig. 1, item 3) facing said sensor; an illuminant (Fig. 1, item LD) adapted to provide light toward the active surface (col. 8, lines 26-28); a horizontal spring (Fig. 1, item 2) adapted to center said captive disc (Fig. 1); and a vertical spring allowing



Art Unit: 2629

resistive movement of said captive disc in vertical direction (as discussed above in regards to claim 1).

However, Kobachi does not teach a focusing lens for focusing light from the active surface onto said sensor.

However, Sayag does teach an optical input device comprising a focusing lens (Fig. 1, item 50) adapted to focus light from a portion of an active surface (Fig. 1, item 11) to a sensor (Fig. 1, item 60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Sayag into the teaching of Kobachi's to include a focusing lens between the active surface and the sensor where the motivation to combine is to reduce the image size of the item to be detected.

Regarding claim 13, Kobachi further teaches a device wherein said captive disc is substantially flat (Fig. 1).

Regarding claim 14, Kobachi further teaches a device wherein said captive disc has convex shape. (Fig. 1, the top surface of item 1 is convex relative to the sensor S, also see Fig. 16 for an embodiment where the top surface is convex relative to the user's finger).

Regarding claim 15, Kobachi further teaches a device wherein said active surface comprises navigation area (Fig. 1, where the surface of item 3 is the navigation

Art Unit: 2629

area) and border area (the bottom surface of item 1), said border area generally surrounding said navigation area (Fig. 1, it is inherent that the surface area portion of item 1 that surrounds item 3).

Regarding claim 16, Kobachi further teaches a device further comprising a selection switch (Fig. 35, item 123) adapted to detect user selection (Fig. 35, where the detection of a user pushing down is a switch function).

Regarding claim 22, Kobachi teaches the limitations of claim 18 as discussed above, however Kobachi does not teach an apparatus further comprising a focusing lens adapted to focus the active surface to said sensor when the active surface is proximal to a focal plane.

However, Sayag does teach an apparatus comprising a focusing lens (Fig. 1, item 50) adapted to focus light from a portion of an active surface (Fig. 1, item 11) to a sensor (Fig. 1, item 60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Sayag into the teaching of Kobachi's to include a focusing lens between the active surface and the sensor where the motivation to combine is to reduce the image size of the item to be detected.

### ***Response to Arguments***

4. Applicant's arguments filed February 3, 2006 have been fully considered but they are not persuasive. Applicant (middle of page 7) argued that Kobachi fails to teach both the horizontal spring and the vertical spring. Examiner respectfully disagrees. Figure 1 has elastic material 2 which acts a horizontal spring allowing resistive movement in the horizontal direction. Additionally, Figure 35 shows a vertical spring allowing resistive movement in the vertical direction. Further, it would have been obvious to combine these two embodiments into a single embodiment because Fig. 35 discusses allowing movement in the X, Y, and Z directions.

Applicant (page 11) also argues that the prior art references made of record and not relied upon do not prevent allowance of the claims. Sayag was cited but not relied upon in the first office action and overcomes the arguments (on page 10) of applicant in regards to the previously cited reference Liao. Sayag explicitly suggests using the lens to reduce the image size of the fingertip (col. 5, line 23), which is the same as focusing the image of the sensed object on the active surface. Additionally, Sayag (Fig. 1) shows that smaller lenses can be used than the lens used in Liao. Therefore, the Sayag lens can be placed into the vertical space above the sensor shown in the embodiment shown by Kobachi on Fig. 35.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Duimel (US 4,879,556) teaches a joystick with a captive surface

held over a sensor where there are embodiments showing springs that can move in the vertical or horizontal directions.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sameer K. Gokhale whose telephone number is (571) 272-5553. The examiner can normally be reached on M-F 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKG  
April 17, 2006

Sameer Gokhale  
Examiner  
Art Unit 2629

AMR A. AWAD  
PRIMARY EXAMINER  
